POLICY RESEARCH WORKING PAPER 2880

The Hidden Costs of Ethnic Conflict

Decomposing Trends in Educational Outcomes of Young Kosovars

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Europe and Central Asia Region
Human Development Sector Unit
August 2002

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Abstract

Alva, Murrugarra, and Paci examine the impact of ethnic segmentation in education on educational outcomes. Between 1991 and the late 1990s, the Albanian Kosovar population received education services in an informal system parallel to the official one. Using the 2000 Kosovo LSMS Survey data, the authors exploit cohort differences in exposure to the parallel system to estimate its effects among Albanian youth. The first (untreated) cohort includes individuals who entered secondary education before 1991 when the "parallel" education system was initiated. The second (treated) cohort includes individuals who entered secondary school in the last ten years under the ethnically segmented education system. To disentangle the effects of the changing system and economic environment, and the changes in the characteristics of the population, a Oaxaca-type decomposition is used.

The results suggest that the past decade of ethnic tension has claimed a substantial toll on the educational outcomes of young male Albanian Kosovars. In addition to declines in enrollment rates in secondary education, those who are enrolled are expected to complete one less year of education. However, secondary school enrollment for girls increased during the parallel system, but with a sharp decline in the expected number of years completed.

This paper—a product of the Human Development Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to examine poverty and social service delivery issues. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Theresa Bebli, room H7-114, telephone 202-473-9690, fax 202-477-0574, email address tbebli@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at salva@unc.edu, emurrugarra@worldbank.org, or ppaci@worldbank.org. August 2002. (31 pages)

The Hidden Costs of Ethnic Conflict:
Decomposing Trends in Educational Outcomes of Young Kosovars[♣]

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[♣] This paper was prepared as part of the World Bank Poverty Assessment of Kosovo based on data from the LSMS. The Kosovo LSMS was jointly financed by the World Bank, FAO, UNDP, the UK Department for International Development and the Dutch Government. Comments from Deon Filmer and other participants at the World Bank Economists' Forum in May 2001 are appreciated.

1. Introduction

In 1948, Kosovo was among the poorest regions of the newly established Socialist Former Republic of Yugoslavia (SFRY) in more than one dimension. Agriculture accounted for over 50 percent of GDP. Average illiteracy rates were in excess of 70 percent, and over three-quarters for the Albanian population, which is the predominant ethnic group in Kosovo[1]. Even as recent as 1988, although industry and mining comprised nearly half of the total national product with agriculture down to 20 percent, output per head in Kosovo was only 28 percent that of the SFRY (World Bank, 2001). Health care statistics with the exception of life expectancy were also among the lowest in Europe (World Bank, 2001b).

During the period of relative autonomy and increased access to Albanian language education from 1975, Kosovo made large advances in the area of education. There is evidence that, in the ten years beginning in 1968, the proportion of Kosovar Albanians in the education system increased from 38 to 72 percent. Moreover, illiteracy dropped to below 10 percent (Malcolm, 1998). The suspension of autonomy in Kosovo in 1989 brought an end to these improvements in the education sector. The consequential imposition of the Federalist government's control on the governance and curriculum of the education system resulted in a majority of the Kosovar Albanians leaving the formal education system instead enrolling into the "parallel education system" from 1991.

The 1999 conflict between the Serbs and Albanians further affected the living standards of the population. Industrial output collapsed, agricultural activities came to a halt and livestock

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[1] Individuals of Albanian and Serb ethnicity make up a majority of Kosovo's population with Albanians comprising 90 percent of the population (UNHCR, 2000). Other minority groups include Roma, Turks and other Slavic groups.

was decimated. As civilian communities were the targets of the violence, the damage to private housing, education and health facilities and other infrastructure was severe. In addition, the conflict resulted in a massive movement of about half a million people within the country and about 800,000 persons or 37 percent of the population to neighboring countries (UNHCR, 2000).

The political and economic changes in Kosovo over the past decades demands a closer look at their impact on the enrollment and education levels of different cohorts of Kosovars. Currently, Kosovo is in a process of transition from emergency relief to long-term economic development. Thanks to massive donor assistance, domestic savings and inflows of *diaspora* funds, the entrepreneurial spirit of the 1980s is reviving, repairs to housing and infrastructure are under way and agricultural activities have begun again. Many Albanians are now coming back after spending a variable period abroad[2]. The focus is increasingly on development needs and opportunities in Kosovo. The large role of education and human capital characteristics of individuals in this process of economic growth and development is well established (see Easterlin, 1981; Becker, Murphy and Tamura, 1993 for example). Therefore, we expect that in Kosovo as well, the skills of the population are likely to be a critical factor in this development. It is therefore essential at this stage

- to assess the impact of the last decade on the skill level of the population,
- to identify the mechanisms behind the process and
- to use these diagnostics to inform the current policy debate leading to the reconstruction of a multiethnic education system in Kosovo.

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[2] There is also evidence that more than 100,000 Serbs and Romas fled from Kosovo at the end of the crisis (UNHCR, 1999).

This paper attempts to contribute to this assessment by identifying the main sources of any existing differences in educational attainment between two different cohorts of Kosovar youth. Given the nearly universal enrolment rates in primary education, we emphasize on enrolment in secondary education and maximum grade achieved. The paper exploits differences in exposure to the ethnically segmented education system of two cohorts of Albanian Kosovars, the main ethnic group affected by the political and economic changes in Kosovo in 1991[3]. The older cohort aged 27-35 years in 2000 represents individuals who were enrolled in secondary education before 1991. The second cohort aged 16-26 years includes individuals who entered secondary school in the last ten years and have therefore spent all their education under the ethnically segmented education system and during the recent conflict. We find important gender differences in the way the last decade has affected their educational outcomes.

The paper begins by providing some background information on the events leading to the recent ethnic conflict and on the 'parallel' system of education that was present in Kosovo in the last decade. After examining the literature on the determinants of education in developing countries, we then describe the data, variable specification and the methodology used for the analysis. The basic results are then presented and the conclusions drawn.

[3] We believe that the minority Serb population was not directly affected by these changes as state policies were targeted to exclude the Albanians, therefore resulting in a parallel education system and the growth of an informal economy.

2. Historical Background and the "Parallel" Education System

The post-World War II history of Kosovo can be divided into five distinct periods:

- the period from the creation of the Socialist Federal Republic of Yugoslavia (SFRY) to the federalist constitutional reforms of 1974;
- the 'golden period' from 1975 to 1989, which saw increased autonomy of the Kosovo region and its ethnic minorities;
- the decade beginning with 1989, the year when the autonomous provincial legislature was superseded, decision making progressively transferred back to Belgrade, and the rights of the ethnic minorities considerably limited;
- the 1999 conflict, which in some areas started as early as the summer of 1997, and the following reconstruction period;
- the new challenging phase of peace and economic development.

The Events Leading to 1991

After a period of relative autonomy within the Republic of Yugoslavia since the late 1940's, Kosovo's autonomy was suspended in 1989, years after the death of Tito (1980) and increasing tensions between the local (Kosovo) and central (Belgrade) governments. This marked the beginning of a downward trend in the living standards of the Kosovar population as a whole and of the Albanian Kosovars in particular. In the first half of the 1990s, GDP contracted by 50 percent, to less than US$400 per head (World Bank, 2001a).

The suspension of autonomy was accompanied by legal measures intended to reverse the significant Serbian emigration from Kosovo and by administrative actions to put the public sector in Serbian hands. While the guidelines were established in March 1990, the specific

actions were later described in the "Temporary Measures" in July 1990. The temporary measures indicated actions to be taken across the public sector administration in Kosovo, including staffing decisions and establishing Serb as the only official language. On the political front, government institutions such as the Parliament and Municipal Assemblies were suspended or not allowed to meet. These actions had a direct impact on the coverage and quality of public services in Kosovo in general and of those offered to the Albanian population in particular. Many Albanians were forced to migrate abroad as a result of political and economic discrimination. In addition, the majority of Kosovar Albanian students who remained in Kosovo left the formal educational system following the restriction on the use of the Albanian language at school, in 1991-92. This marked the beginning of the overcrowded and under-resourced '*parallel*' system of education.

The Box below summarizes the major events leading to the creation of the parallel system.

Major events in the creation of the parallel system in Kosovo

1974	Constitution of the Federal Republic of Yugoslavia. Recognized the existence of different *nations* (Serbia, Croatia, Bosnia, Slovenia, Montenegro, Macedonia) and *nationalities* (Kosovo Albanians and Hungarians) within the FRY.
1989	Suspension of Kosovo Autonomy (February).
1990	- Programme for Attainment of Peace, Freedom and Prosperity in the Socialist Autonomous Province of Kosovo approved by the Serbian Parliament (March). - Temporary measures on Kosovo (July), officially named Law on the Activities of Organs of the Republic in Exceptional Circumstances, approved by the Serbian Parliament. It mainly specified incentives to increase Serb demographic participation, and facilitated the dismissal or replacement of Albanian public servants. - Constitutional Declaration(July 5th). The Albanian dominated Kosovo Assembly gives Kosovo nation status. - Kacanik's Constitution (September). Kosovar Albanians declared independence and a parliamentary government.
1991	Referendum for Independence of Kosovo by the Albanians.
1992	Presidential and Parliamentary elections in Kosovo by the Albanians. Rugova elected but not recognized by Yugoslavia or other countries.

The 'Parallel' Education System

The effects of the "Temporary Measures" imposed in 1990 were directly observed in the delivery of education. In order to advance the interests of one group (the Serbs), at the expense of the other (Albanians), a segregated education system was established (Bush and Saltarelli, 2000; UNHCR, 2000). Schools and faculties in Albanian language were closed, a unified Serb-oriented curriculum was established, Albanian teachers were dismissed and separate shifts for Albanian and Serb students were imposed in some schools.

In the midst of these changes, the Kosovar Albanian population supported the functioning of a parallel administrative system to guarantee the delivery of public services to the Kosovar Albanian population. While students at the primary level were still able to use the same schools in different shifts, most Kosovar-Albanian students at the secondary level received classes outside school facilities and often in private homes. Secondary education was directly affected by the lack of infrastructure and human resources in education. The system was funded by contributions from the Albanian population through a parallel income and cadastral tax system[4]. Additional sources of funding for these programs included direct contributions and donations from organizations and households (RIINVEST, 2000). It is reported that more than 1,400 houses were used as centers of education without compensation to the families. Despite the effort to fund the education system in this manner, the availability of educational inputs declined significantly, and teachers were unable to update their teaching skills and methodologies.

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[4] A 3 percent tax rate on net income is widely recognized. The parallel tax collection agencies charged between 2 and 4 percent over the total collection (RIINVEST, 2000).

In summary, the parallel system represented a separate education system for the Kosovar-Albanian population, which directly reduced the access, resources and utilization of education services, particularly at the secondary school level.

Identifying Those Affected by the Parallel System

Children in Kosovo enter formal education at the age of 6 or 7 years and spend 8 years in primary school. At age 14 or 15 years, they choose between enrolling into a general secondary school -- high school -- or a technical school. Successful completion of three to four years in a general secondary school allows access to university education while students of technical schools graduate after a period of two to three years. In order to identify the effects on the parallel system in secondary education, this paper distinguishes those individuals that -- because of their age -- partially or fully faced a parallel system in secondary education, from those that were not exposed to the system.

Kosovo's Education System

Age group	Grades	Level
0-5		Preschool
6-14	1-8	Primary
15-18	9-12/13	High school
15-17	9-10/11	Technical
	4 years	Professional

Source: World Bank (2001c) Kosovo Poverty Assessment Report. The World Bank.

The first group is comprised of individuals aged 17 years and over in 1990 (27 years and over in 2000). This cohort of individuals had already enrolled into secondary education before 1990 and consequently was not exposed to the parallel regime. A student enrolled in secondary education at age 17 would have typically already made the decision to enroll into secondary

education. Thus, they are considered as *not exposed to the parallel system or as having limited exposure to the parallel system.* This defines *Cohort 1.*

Cohort 2 is defined as those individuals who faced the decision to enroll in or continue in secondary education under the parallel regime. An individual aged 16 years in 1990 (or aged 26 years in 2000) was either entering the first or second year of secondary education. At this time, those students (or their families) were making the decision to participate in the parallel system for most of their secondary education. Thus, those individuals aged 16 years of age or less in 1990 (or 26 years or less in 2000) were *fully or substantially exposed to the parallel system.* (see Box below).

Cohorts affected by the Parallel System in Secondary Education			
Political and other events	End of Autonomy	- Temporary Measures - Constitutional Declaration. Beg. of school year	Violence and conflict
Dates	1989	July, 1990 Sept. 1990	1999
Education system	Unified	Parallel	
Cohorts	*Cohort 1*	*Cohort 2*	
Exposure	No exposure ***(aged 17 or more in 1990)***	Significant or full exposure ***(aged 16 or less in September 1990)***	
Age groups in 2000	27-35	16-26	
Note: The Kosovo Living Standards and Measurement Survey was carried out during the Fall (September-November) 2000.			

In this paper, we exploit the difference in exposure to the parallel system to identify the impact of such arrangement on educational indicators for secondary education (enrollment, drop out or continuation in secondary school) of Kosovar Albanians after controlling for other individual and household characteristics.

3. Determinants of Education

Education outcomes are typically influenced by individual, household and community characteristics. Human capital theory treats education as the means to increase an individual's economic position (Becker, 1993; Schultz, 1998 for example). As a result, returns to investments in education act as one of the most important determinants of education. However, its role is not consistent across all developing countries. Although a year of schooling increases earnings by about 10 percent on average, this is not necessarily true in centrally planned and transition economies where other factors such as political connections are at play (Moock, Patrinos and Venkataraman, 1998; Psacharapoulos, 1994). Moreover returns are higher for wage employees as compared to those employed in the informal sector or in agriculture (Mason and Khandker, 1996). We expect this to be the case in Kosovo as well, especially in the 1990s. Although there is limited data on Kosovo to measure returns to schooling during this period, based on the ethnically segregated political and economic system, there is reason to believe that returns to schooling are low, particularly among Albanians. However, it is also likely that Albanians were motivated to achieve higher education through the parallel system as a means to attain vocational skills to counter the constraints posed by the Serb dominated economy.

The role of social factors and household influences on education has also been well described in the literature, especially in analyses of gender differences in education (King and

Hill, 1993). Wealth gaps in education have also been observed across developing countries (Deolalikar, 1997; Filmer, 1999). The higher the economic position of the household, the higher the school attainment is. Moreover, the household's economic position could also affect the role played by other household and community characteristics on school enrollment (Deolalikar, 1997). Richer households are in a better position to finance children's education both directly and in terms of the opportunity cost of children's time derived from labor force participation. This is more of an issue when we take into account the family size including the number of children in the household often resulting in differential education outcomes for male and female children. It has been shown that various measures of education are usually negatively associated with number of siblings (Lloyd, 1994 for example).

Similarly, social norms are just as important. In some societies, social norms may limit female education such that parents may choose in favor of son's schooling as compared to educating their daughters. However, parents' education (especially of mothers) encourages children's enrollment and education in most developing countries (Filmer, 1999). This effect of female education on primary enrollment is strongest among households falling in the poorest quintiles in developing countries (Deolalikar, 1997).

4. Data and Variable Definition

This analysis uses data from the new Living Standard Measurement Survey (LSMS) for Kosovo collected by the World Bank (World Bank, 2001b)[5]. The Kosovo LSMS is a household survey, which was administered to 2,880 households (2,400 Albanian and 480 Serbs) randomly

[5] For more information on the Kosovo LSMS, see http://www.worldbank.org/lsms/guide/select.html

selected from the Albanian and Serbian population of Kosovo, respectively. It comprises a community questionnaire as well as a household questionnaire designed to provide the necessary empirical base line for the future economic development of Kosovo and designing its poverty reduction strategy. As such, it includes detailed information on individual, household and community characteristics collected over a period of three months between September and December 2000. This analysis focuses on the education module of the household questionnaire.

We use two dependent variables to measure education. The first dependent variable of interest is enrollment in secondary education, a variable that takes the value of one if the individual has ever been enrolled in secondary education and zero otherwise. The sample is restricted to individuals who finished primary education (completed grade 8). The second dependent variable in the next part of the analysis is the highest grade achieved by those that have enrolled in secondary education. Our sample includes Kosovar Albanians and Serbs aged 16-35 years. We perform the analysis separately on the two cohorts of Albanians as we expect the political and economic changes to have a significant impact on their education patterns. The entire Serb sample is analyzed using a dummy variable to identify the two cohorts. We do this for two reasons. First, given the size of the Serb sample, it is not practical to analyze the two cohorts separately. Second, we don't expect the change in the education system to have affected the Serbs much, so we treat them only as a comparison group.

Other literature emphasizes the importance of household wealth in determining education outcomes (Deolalikar, 1997). Given the lack of a retrospective history of incomes, and the substantial changes observed in the last years, we use an asset-based measure to identify potential income effects. If durable goods reflect previous incomes, the value of durables in a

household would be a good measure of long-term income of the household. The value of durables owned by the household for at least 5 years avoids including the value of the large inflow of humanitarian aid and cash from returning migrants after the recent conflict. Other variables included are education of the father as another proxy for the socio-economic status of the household, the location at birth (urban/rural and within Yugoslavia or abroad), the area of administrative responsibility, and a dummy for other ethnic groups. We expect education patterns or expectations to be higher for Kosovars born in urban areas or outside Yugoslavia.

Despite their importance in explaining human capital outcomes, demographic and other household characteristics are not used as regressors for two main reasons. First, there are difficulties in retroactively reconstructing the characteristics of households that the individual lived in at the time the decision to enroll or not in secondary education was taken. Using recent information on the household where the individual currently lives is not appropriate since individuals may be living in a separate household (because of marriage, for example) and more importantly, because of the drastic demographic changes during the war. Second, this analysis focuses more on the differentials in education outcomes rather than its determinants. We therefore believe that including these characteristics in the analysis is not critical to the analysis. The definition of the explanatory variables is provided in Table A1 in the appendix.

5. Methodology

Figures 1a and 1b present the educational profile of males and females from the two Kosovar Albanian cohorts described earlier in the paper. It also includes the profile for the Serb sample as a comparison group. It is clear from the graph that enrolment in primary education is close to universal for both ethnic groups and dropouts from primary education are fairly rare. As

a result, completion rates for primary education are high. However a relatively small proportion of those completing primary school progress into secondary education. The drop is particularly significant for women.

The empirical trends in Figures 1a and 1b provide the rationale for focusing on secondary education. Reflecting the drop shown by the curve after primary education just before year 9, the analysis is separated in two stages. The decision to enroll in secondary education is first modeled. Then, the focus shifts to the duration of the educational spell for those who have enrolled in secondary education – grade 9. Graphically, this involves focusing on the gentle decline experienced in the empirical survival function for periods after Year 8. This decline is amplified in Figures A1 and A2 in the Appendix.

Modeling the Enrollment in Secondary Education

The enrollment decision is estimated using a standard Probit model. In this context, the probability of enrolling is a latent variable, E_{ij}^*, that is a function of household (H_j) and individual (I_{ij}) characteristics. For individual i in household j, we cannot observe the latent variable E_{ij}^* but only the outcome of such decision, $E_{ij} = 1\{E_{ij} > 0\}$. We only observe the outcome determined linearly by the characteristics above and unobserved components, u_{ij}. Collapsing all characteristics into $X_{ij} = 1\{ H_j I_{ij} \}$ the model is

$$E_{ij} = 1\{X_{ij}\beta + u_{ij} > 0\} \qquad (1)$$

Given the evolution of the ethnic conflict in Kosovo, we estimate its effects in a variety of ways. We begin by focusing on the two specific groups of Kosovar Albanians.

- those taking the decision whether or not to enter secondary education in 1991, the time of the split between the Serbian dominated education system and the 'parallel' system, and
- those who have entered secondary education in September 1999, the year immediately after the conflict.

At the time of the survey, these individuals were aged 24 and 16 years respectively. We quantify the effect of ethnic conflict on these two groups of individuals by introducing a shift variable for individuals born in these two years[6].

We then move on to estimate the effect of the exposure to the parallel system on the educational outcome of the young Kosovars Albanians by estimating equation (1) separately for the two cohorts (c=1,2) corresponding to those exposed to the parallel system and those not exposed. The complete model to be estimated is therefore

$$E_{ij}^{c} = 1\{X_{ij}^{c}\beta^{c} + \text{Age}^{16}\alpha_1 + \text{Age}^{24}\alpha_2 + u_{ij}^{c} > 0\}, \; c = 1,2 \qquad (2)$$

The parallel system is assumed to have affected the linkages between educational determinants and the outcome itself. For example, the effect of parents' education on secondary enrollment must have changed because of the restrictions imposed on the enrollment in secondary education for the Kosovar-Albanians. Given the same parents' education, some students were not able to enroll because of the changes introduced by the parallel system. In this sense, the changes in the model parameters, β^{c}, represent the changes due to the parallel system.

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[6] Since the change in education systems did not affect the Serbs, we observe the impact of conflict on these groups of Albanians only.

A single analysis for the Serbs, the comparison group, covers individuals in both cohorts with a dummy variable identifying the two cohorts.

The estimated models provide the setting for describing counterfactual outcomes. The main objective is to compare expected enrolment rates for the exposed cohort under the conditions (parameters) of the unexposed cohort. This way, we estimate the enrollment rate if those aged 16-26 years were living under the conditions of those aged 27-35 years. Formally, this implies comparing $E[E_{ij}^{1} \mid X_{ij}^{1}, \beta^{1}] = E[\, P\{X_{ij}^{1}\beta^{1} + u_{ij}^{1} > 0\}$ with $E[E_{ij}^{1} \mid X_{jj}^{1}, \beta^{2}] = E[\, P\{X_{ij}^{1}\beta^{2} + u_{ij}^{1} > 0\}$. For example, we estimate the enrollment equation (2) for the cohort aged 27-35 years (not exposed) and using these parameters, we predict the enrollment of the cohort aged 16-26 years.

Survival in Secondary and Higher Education

Once individuals are enrolled in secondary education (grade 9th), their performance throughout secondary education and higher education is modeled as a survival model where educational attainment (years of education) is the duration of interest.

The strategy actually mimics that described earlier in the paper, but a number of technical differences are worth noting. First, survival models connect the drop out (or hazard) rate at each education level (year) to observed characteristics of the individual and the household. For each Albanian cohort, c=1,2, we have:

$$h_{ij}^{c}(t) = h^{c}(X_{ij}^{c}, \text{Age}^{16}\alpha_{1}, \text{Age}^{24}\alpha_{2}, \beta^{c}) \qquad (3)$$

Estimating $h^{c}(.)$ requires imposing some assumption about the distribution of the unobserved variables. Choosing the appropriate hazard function (or its corresponding survival one) is driven by the features observed in the empirical survival (or hazard) function. The

empirical survival functions indicate that after enrollment in secondary education (9^{th} grade), a peak in dropout rates is observed in grade 12, when a number of individuals finish vocational or technical secondary education. This increase in the hazard rate is better captured by a lognormal distribution. This specification of the hazard function is favored over the commonly used proportional hazard model (PHM) because we suspect that dramatic differences experienced in Kosovo over the last decade may have also changed the shape of the survival function itself, including the autonomous component. In such a case, comparing the survival rates emerging from a proportional hazard model across cohorts would impose over-restrictive assumptions about the changes in $h_0^c(t)$. Using a non-proportional model (such as the lognormal one), we do not impose such restrictions on the survival functions.

Following a similar reasoning, we compare the hazard rate for each individual in the affected cohort, $h\ (X_{jj}^1, \beta^1)$, with the expected survival rate if those individuals, X_{jj}^1, were responding in the unaffected scenario, $h(X_{jj}^1, \beta^2)$. The difference $h\ (X_{jj}^1, \beta^1)$- $h(X_{jj}^1, \beta^2)$ is interpreted as the impact of the parallel system. Again, these models are run separately for each of the two Albanian cohorts using the Serb population as a comparison group.

6. Results of the Regression Analysis

This section presents the results of the estimation of the probit model for the probability of enrolling in secondary education and the duration model for the length of the education spell. The results are presented for males and females separately since structural differences between these two groups appear to exist amongst the Albanians. For each of the tables, the first three columns refer to our first cohort of Albanians, males aged 16 to 26 years at the time of the survey. Columns 4 to 6 refer to the older cohort of Albanians, aged 27-35 years. For comparison,

the last three columns present results for a single sample of Serbs that includes both males and females. As mentioned earlier, the main rationale for polling the Serb sample together is the small size of the sub-samples. However, it also reflects the results of standard tests on the structural stability of the sample, which reject the hypothesis of structural differences in the regression coefficients between the two age cohorts of Serbs and between males and females.

Tables 1a and 1b present the results of the Probit equation that estimates the probability of enrolling into secondary education for three samples of males and females respectively, that have completed secondary education. Unsurprisingly, the probability of enrolment into secondary education increases with father's education for both cohorts of Albanian as well as for the Serbs. In addition, the value of the durables owned by the household and having been born in an urban area increases significantly the probability of enrolment for the older cohort of Albanians as well as for the Serbs. Finally, living in the areas of responsibility of the Germans or the USA has a significant negative effect for both cohorts of Albanians while individuals from ethnic minorities living in Serbian areas have a significantly lower probability of enrolling into secondary education.

Interestingly, the effect of the value of the durables becomes insignificant for the Albanian girls while there is an increase in the role of father's education and having been born in an urban area. This points to the relative importance of cultural and social factors that act as barriers to entry to education as opposed to financial constraints.

Father's education is also an important determinant of the grade achieved for those who enroll in secondary education, independently of their ethnic origin and gender (Tables 2a and 2b). This effect is stronger for the younger cohort of Albanian and the Serbs. Having been born

in an urban area also has a positive effect on the grade achieved for the Albanians. However, this effect is not significant for the youngest cohort of girls. Finally, it is important to note that the value of the durables owned by the household seems to affect the probability of enrolment but not the length of stay in education for the Albanians. It however maintains its positive effect for the Serb sample. It is also interesting to note the positive and significant coefficient of the dummy for ethnic minority within the Serb sample, which suggests that, although their probability to enroll is lower, the expected stay for the members of the minority groups that enroll is higher. One should however be warned about reading too much into this result by the heterogeneity of the ethnic minority group.

The insignificant coefficient amongst the Serbs of the female dummy and of the dummy indicating the older cohort in the Probit model (Table 1a and 1b) suggests that there are no significant age or gender differences in the probability of enrolment in secondary education amongst the Serbs. However, on average, the older cohort is expected to achieve a higher grade than the younger cohort.

Measuring the Effects of Ethnic Tension and Conflict

The significant positive coefficient of the age 24 dummy variable suggests that the introduction of an Albanian education system significantly increased the enrolment of Albanian boys into secondary education but had no significant effect on girls. By way of contrast, the end of the conflict appears to have resulted into a significant increase in the probability of enrolment into secondary education for both boys and girls but with a considerably higher effect on girls.

We then move on to estimate the effect of the exposure to the parallel system on the educational outcomes of the young Kosovars. We do this by comparing the predicted probability

of enrolment and the expected length of the educational spell for the younger cohort with what they would have had, given their characteristics, had they been educated under the old system.

Figure 2 reports the expected enrolment probabilities for the two Albanian cohorts and the simulated probability for the younger cohort had it been educated under the old system. The graph shows that, with an enrolment probability of 76 percent, young males from the younger cohort are less likely to be enrolled into secondary education than their counterfactual cohort – 81 percent. In addition, it tells us that the decline is entirely due to differences in the system. Indeed, the younger cohort is endowed with better characteristics than the old one and, had the change in parameters not occurred, they would have experienced better enrolment than their older counterparts (85 percent). For young women, the situation is rather different. The probability of enrolment for younger women is nine percentage points higher than for their older counterparts and this difference is only partially explained by the increase in the endowment (4 percentage points). The main source of the increase is in the estimated parameters, showing that the parallel system has acted as an incentive for girls to participate in education beyond primary education. Table 3 shows that the values of the estimated probabilities and the confidence intervals around those values. The latter show that the inter-cohort differences are statistically significant.

Figure 3 shows the effects of the parallel system on the expected years of education for the younger individuals that enrolled in secondary school. The results are striking. The events of the last decade have reduced the expected years of education for the Albanian population of both genders. This is despite a slight improvement in the characteristics of the individuals in the two cohorts. Table 4 shows that the expected values are statistically different from one another.

7. Conclusions

The educational system maintained by the Albanians in the last decade has been praised by many as being rather successful in maintaining adequate standards of education for the Albanian population under conditions of ethnic conflict.

Our results suggest that, while this may indeed have been the case, the last decade of ethnic tension has nevertheless claimed a substantial toll on the educational outcomes of the Albanian Kosovars. This is particularly true of the young males who have seen their enrolment rates in secondary education reduced by nearly 10 percentage points and on average – if enrolled – are expected to complete one less year in education. The parallel system appears to have been successful in protecting, and indeed encouraging, secondary school enrolment for girls but at the expense of a sharp decline in the expected numbers of years completed (1.3).

Finally in the context of widespread ethnic conflict the introduction of an Albanian parallel system in 1991 on the one hand and the UN intervention in 1999 on the other, appear to have been seen as stabilizing factors by the Albanian population. Soon after these two events, enrolment in secondary education increased significantly for men and for the youngest women in the sample. Moreover, the effect appears to have continued beyond the short-term. Having entered secondary education just after the beginning of the parallel system has a significant positive effect on the expected number of years completed.

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Fig 1a: Empirical Survivor Curve based on Highest Grade Completed: Males

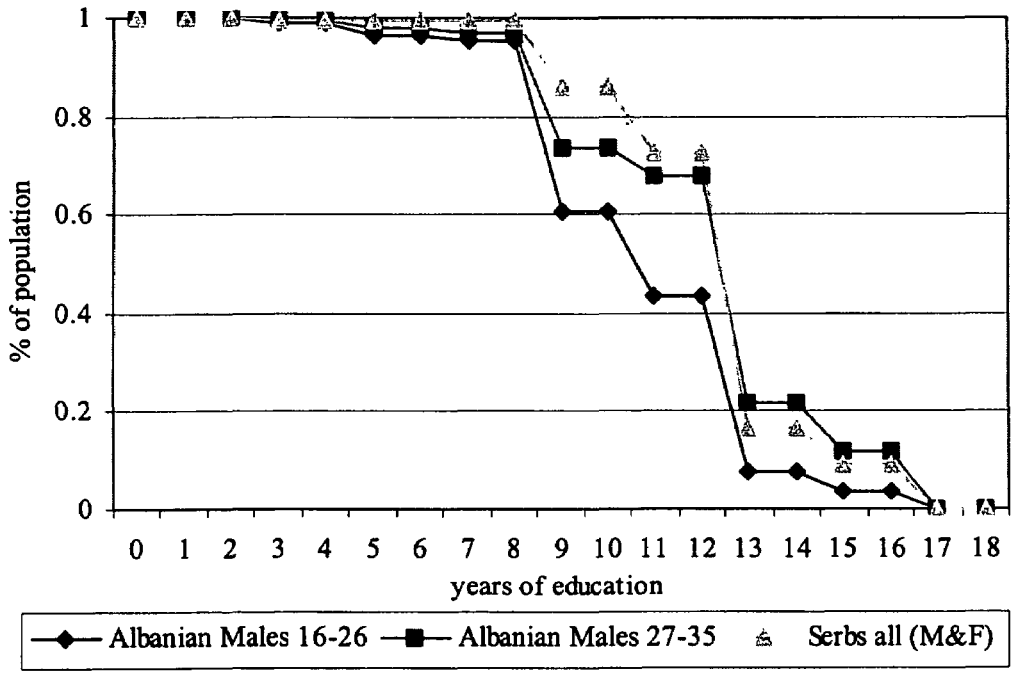


Fig 1b: Empirical Survivor Curve based on Highest Grade Completed: Females

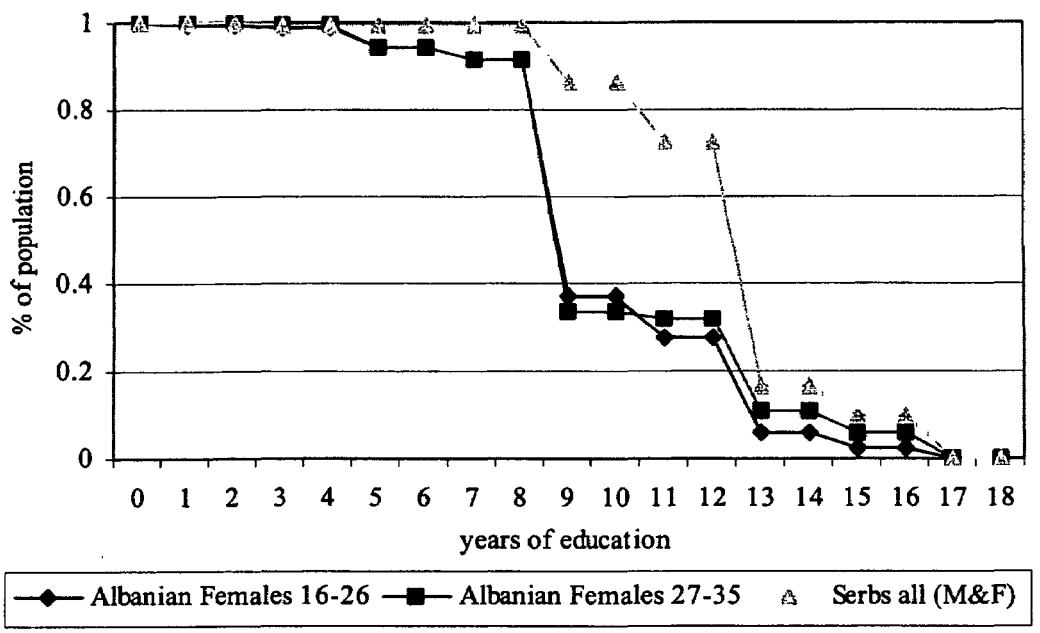


Fig 2: Expected Probability of Secondary Education Enrollment of Albanians

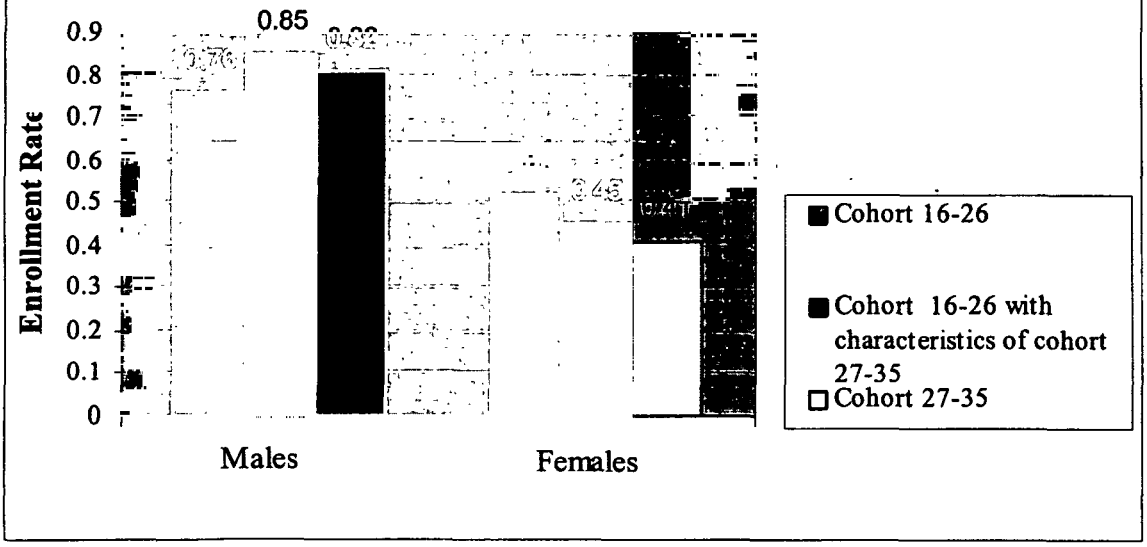


Fig 3:Expected Years of Education of Albanians

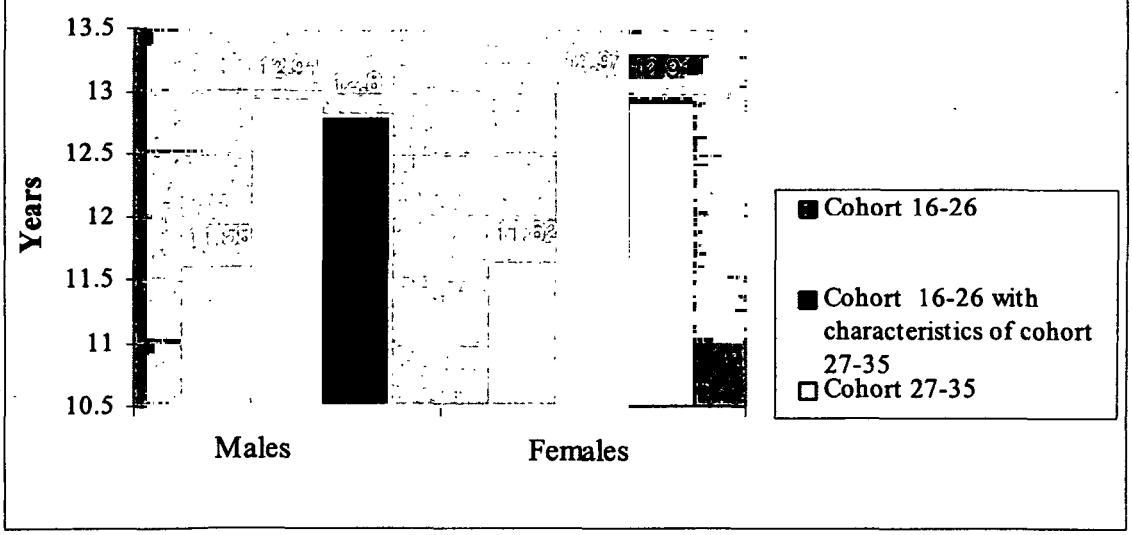


Table 1a: Probit results of the probability of enrollment into Secondary Education: Albanian Males in comparison with Serbs

	Albanian Males: Age 16-26			Albanian Males: Age 27-35			Serb Males & Females:Age:16-35		
	Coefficient	Z	Mean	Coefficient	Z	Mean	Coefficient	Z	Mean
Age is 16 years	0.585	3.381	0.114	-	-	-	-	-	-
Age is 24 years	0.362	2.191	0.097	-	-	-	-	-	-
Age is 27-35 years	-	-	-	-	-	-	-0.113	-0.558	0.331
Females	-	-	-	-	-	-	-0.216	-1.083	0.524
Serbs and others	-0.053	-0.251	0.044	0.125	0.366	0.048	-1.400	-1.998	0.008
Born in Urban areas	0.094	0.888	0.377	0.511	2.692	0.320	0.465	1.777	0.356
Born outside Former Yugoslavia	-	-		-	-	-	-	-	-
Residence outside Former Yugoslavia before conflict	-0.133	-0.408	0.019	0.021	0.058	0.050	-	-	-
Father's education (in years)	0.120	9.098	10.445	0.089	3.803	8.880	0.084	3.179	10.703
Value of Household durables over 5 years old (log)	0.073	2.034	6.498	-0.039	-0.621	6.951	0.321	2.863	7.236
Area of Responsibility									
France	-0.317	-1.967	0.119	-0.419	-1.314	0.093	-0.214	-0.791	0.517
Germany	-0.998	-7.171	0.208	-1.165	-4.773	0.224	-	-	-
Italy	-0.245	-1.605	0.158	-0.949	-3.571	0.147	-	-	-
USA	-0.378	-2.693	0.204	-0.703	-2.853	0.212	-0.417	-1.466	0.234
Constant	-0.644	-2.421		0.997	2.053		-1.330	-1.458	
N	1048			424			454		
Log likelihood	-474.734			-171.615			-98.452		
Pseudo R square	0.178			0.155			0.195		

Note: The variable "Serbs and others" is modified to "Albanians and others" in the Serb model.

Table 1b: Probit results of the probability of enrollment into Secondary Education: Albanian Females in comparison with Serbs

	Albanian Females: Age 16-26			Albanian Females: Age 27-35			Serb Males & Females:Age:16-35		
	Coefficient	Z	Mean	Coefficient	Z	Mean	Coefficient	Z	Mean
Age is 16 years	0.976	6.418	0.106	-	-	-	-	-	-
Age is 24 years	0.072	0.513	0.097	-	-	-	-	-	-
Age is 27-35 years	-	-	-	-	-	-	-0.113	-0.558	0.331
Females	-	-	-	-	-	-	-0.216	-1.083	0.524
Serbs and others	-0.009	-0.041	0.045	0.234	0.920	0.054	-1.400	-1.998	0.008
Born in Urban areas	1.036	11.466	0.389	0.885	7.567	0.294	0.465	1.777	0.356
Born outside Former Yugoslavia	0.538	0.639	0.003	-0.059	-0.125	0.017	-	-	-
Residence outside Former Yugoslavia before conflict	-	-	-	0.202	0.588	0.025	-	-	-
Father's education (in years)	0.076	6.298	10.485	0.022	1.517	10.167	0.084	3.179	10.703
Value of Household durables over 5 years old (log)	0.030	0.888	6.551	-0.038	-0.879	6.798	0.321	2.863	7.236
Area of Responsibility									
France	-0.460	-3.176	0.114	-0.232	-1.235	0.098	-0.214	-0.791	0.517
Germany	-0.784	-6.048	0.204	-0.823	-5.293	0.246	-	-	-
Italy	-0.557	-4.239	0.165	-0.281	-1.733	0.159	-	-	-
USA	-0.353	-2.937	0.218	-0.366	-2.387	0.203	-0.417	-1.466	0.234
Constant	-1.038	-4.113		-0.151	-0.469		-1.330	-1.458	
N	1108			642			454		
Log likelihood	-596.850			-383.129			-98.452		
Pseudo R square	0.222			0.117			0.195		

Note: The variable "Serbs and others" is modified to "Albanians and others" in the Serb model.

Table 2a: Log-normal Hazard Model for Duration of Education: Albanian Males in comparison with Serbs

	Albanian Males: Age 16-26			Albanian Males: Age 27-35			Serb Males & Females:Age:16-35		
	Coefficient	Z	Mean	Coefficient	Z	Mean	Coefficient	Z	Mean
Age is 16 years	-0.263	-20.867	0.133	-	-	-	-	-	-
Age is 24 years	0.048	3.451	0.102	-	-	-	-	-	-
Age is 27-35 years	-	-	-	-	-	-	0.074	5.104	0.329
Females	-	-	-	-	-	-	0.013	0.967	0.517
Serbs and others	0.016	0.615	0.029	-0.030	-0.863	0.038	0.414	2.577	0.002
Born in Urban areas	0.015	1.750	0.419	0.024	1.714	0.357	-0.020	-1.271	0.369
Born outside Former Yugoslavia	0.181	2.162	0.003	-	-	0.000	-0.118	-1.461	0.010
Residence outside Former Yugoslavia before conflict	-0.007	-0.248	0.019	-0.029	-0.970	0.049	-	-	-
Father's education (in years)	0.003	2.286	11.183	0.003	1.776	9.310	0.004	2.079	10.971
Value of Household durables over 5 years old (log)	0.000	-0.130	6.526	-0.003	-0.552	6.944	0.018	2.204	7.286
Area of Responsibility									
France	-0.028	-2.155	0.122	-0.082	-3.862	0.099	-0.009	-0.529	0.515
Germany	-0.028	-1.920	0.148	-0.050	-2.402	0.184	-0.226	-3.502	0.004
Italy	-0.029	-2.219	0.169	-0.033	-1.538	0.138	-0.002	-0.027	0.012
USA	-0.003	-0.240	0.204	-0.048	-2.388	0.200	0.011	0.540	0.215
Constant	2.453	97.105	-	2.566	63.212	-	2.292	34.911	-
N	793			337			430		
Log likelihood	583.885			239.323			241.874		

Note: The variable "Serbs and others" is modified to "Albanians and others" in the Serb model.

Table 2b: Log-normal Hazard Model for Duration of Education: Albanian Females in comparison with Serbs

	Albanian Females: Age 16-26			Albanian Females: Age 27-35			Serb Males & Females:Age:16-35		
	Coefficient	Z	Mean	Coefficient	Z	Mean	Coefficient	Z	Mean
Age is 16 years	-0.261	-17.109	0.157	-	-	-	-	-	-
Age is 24 years	0.071	3.763	0.098	-	-	-	-	-	-
Age is 27-35 years	-	-	-	-	-	-	0.074	5.104	0.329
Females	-	-	-	-	-	-	0.013	0.967	0.517
Serbs and others	-0.010	-0.316	0.024	-0.042	-1.010	0.045	0.414	2.577	0.002
Born in Urban areas	0.001	0.102	0.594	0.034	2.007	0.495	-0.020	-1.271	0.369
Born outside Former Yugoslavia	0.062	0.853	0.011	0.007	0.115	0.020	-0.118	-1.461	0.054
Residence outside Former Yugoslavia before conflict	-0.013	-0.231	0.016	-0.007	-0.145	0.034	-	-	-
Father's education (in years)	0.004	2.216	11.876	0.003	1.403	11.053	0.004	2.079	10.971
Value of Household durables over 5 years old (log)	0.004	0.990	6.699	0.011	1.538	6.852	0.018	2.204	7.286
Area of Responsibility									
France	-0.023	-1.349	0.103	-0.098	-3.669	0.087	-0.009	-0.529	0.515
Germany	-0.007	-0.390	0.137	-0.055	-2.006	0.139	-0.226	-3.502	0.004
Italy	0.003	0.181	0.146	-0.057	-2.340	0.184	-0.002	-0.027	0.012
USA	-0.021	-1.292	0.211	-0.051	-2.054	0.195	0.011	0.540	0.215
Constant	2.414	65.817		2.467	46.325		2.292	34.911	
N	537			249			430		
Log likelihood	362.041			164.293			241.874		

Note: The variable "Serbs and others" is modified to "Albanians and others" in the Serb model.

Table 3: Expected probability of enrollment into Secondary Education: Albanian Males and Females

	Males			Females		
	Exp. Prob. of Sec. Enrollment	Confidence Interval	% Enrolled in Sec. Educ.	Exp. Prob. of Sec. Enrollment	Confidence Interval	% Enrolled in Sec. Educ.
Cohort aged 16-26	0.76	(0.75, 0.77)	75.99	0.52	(0.51, 0.54)	52.04
Cohort aged 27-35	0.82	(0.80, 0.83)	81.50	0.41	(0.39, 0.42)	40.66
Counterfactual cohort aged 16-26	0.85	(0.84, 0.86)		0.45	(0.44, 0.47)	

Table 4: Expected Years of Education:Albanian Males and Females

	Males			Females		
	Expected Yrs. of Education	Confidence Interval	Avg. Years of Education	Expected Yrs. of Education	Confidence Interval	Avg. Years of Education
Cohort aged 16-26	11.58	(11.51, 11.65)	11.68	11.62	(11.53, 11.71	11.74
Cohort aged 27-35	12.80	(12.75, 12.85)	12.91	12.91	(12.84, 12.98	13.02
Counterfactual cohort aged 16-26	12.91	(12.88, 12.94)		12.97	(12.93, 13.02)	

Appendix

Table A1: Description of Variables

Dependent Variables	
Enrolled in Secondary Education	1 if currently enrolled in Secondary Education, 0 otherwise. (Sample is composed of those who completed Primary Education- Grade 8)
Highest grade completed	Continuous variable in years. (Sample is composed by those who enrolled in Secondary Education).
Individual Level Variables	
Age is 16 years	1 if age is 16 years, 0 otherwise
Age is 24 years	1 if age is 24 years, 0 otherwise
Age is 27-35 years	1 if age is 27-35 years, 0 otherwise
Female	1 if female, 0 otherwise
Serbs and others	1 if ethnic group is Serb or other minorities, 0 otherwise
Albanians and others	1 if ethnic group is Albanian or other minorities, 0 otherwise
Born in Urban area	1 if born in urban area, 0 otherwise
Born outside Former Yugoslavia (Serbs)	1 if born outside Kosovo/Former Yugoslavia/Serbs, 0 otherwise
Born outside Former Yugoslavia (Albanians)	1 if born outside Kosovo/Former Yugoslavia, 0 otherwise
Residence outside Former Yugoslavia before conflict (Serbs)	1 if residence before 1999 conflict was outside Kosovo/Former Yugoslavia/Serbia, 0 otherwise
Residence outside Former Yugoslavia before conflict (Albanians)	1 if residence before 1999 conflict was outside Kosovo/Former Yugoslavia, 0 otherwise
Household Level Variables	
Father's education (in years)	Continuous variable in years. Based on Father's education if father resides in household. If father does not reside in the household, based on education of male head of household else missing.
Value of Household durables over 5 years old	Log value of Household durables over 5 years old
Community Level Variables	
Area of Responsibility	
France	1 if AOR is of France, 0 otherwise
Germany	1 if AOR is of Germany, 0 otherwise
Italy	1 if AOR is of Italy, 0 otherwise
USA	1 if AOR is of USA, 0 otherwise
UK (Omitted category)	1 if AOR is of UK, 0 otherwise

Fig A1: Empirical Survivor Curve based on Highest Grade Completed: Males

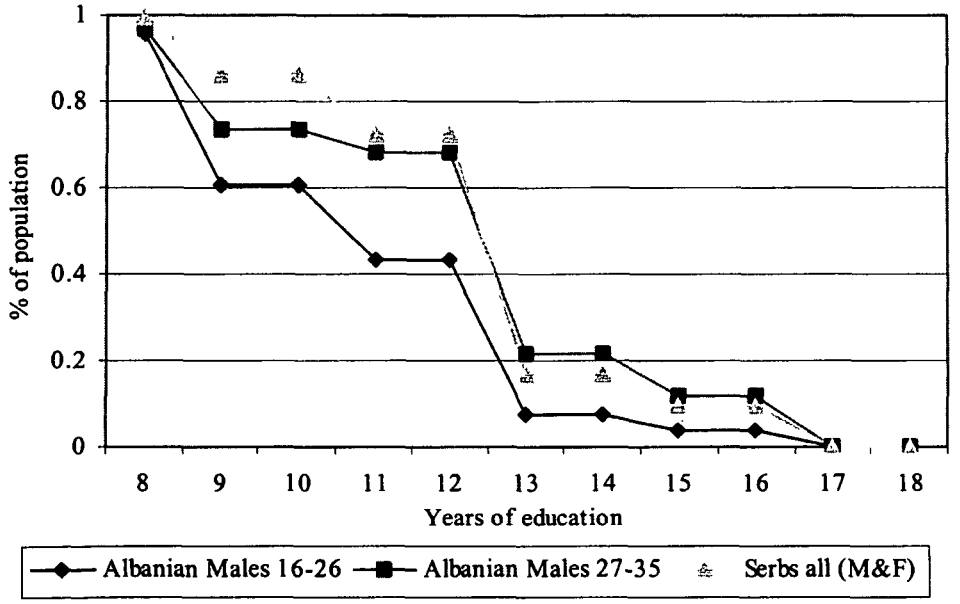
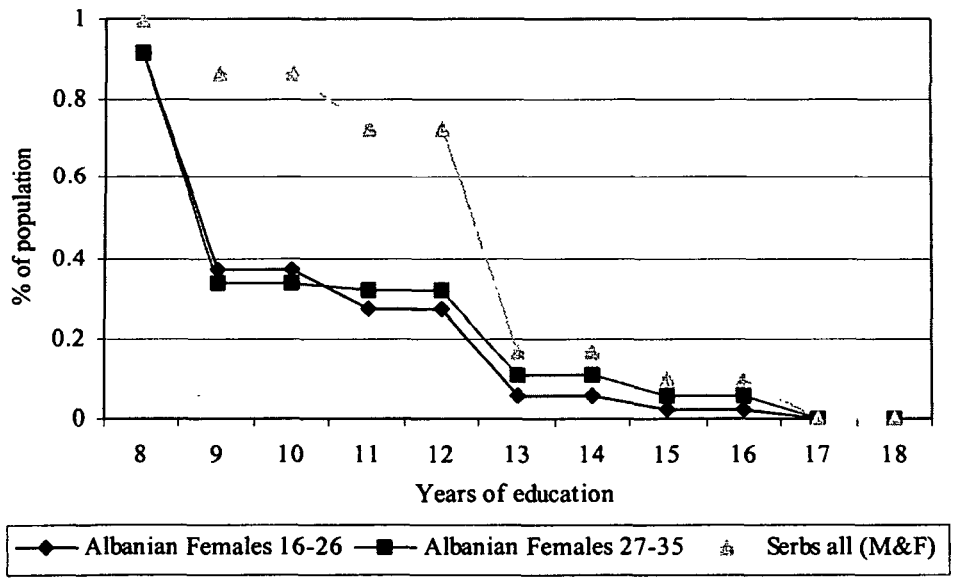


Fig A2: Empirical Survivor Curve based on Highest Grade Completed: Females



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